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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/630,634 | 07/29/2003 | Stephen A. Campbell | 130109.467 | 9054 |

500 7590 12/19/2005

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| EXAMINER |
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KALAFUT, STEPHEN J

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| ART UNIT | PAPER NUMBER |
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1745

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/630,634

Applicant(s)

CAMPBELL, STEPHEN A.

Examiner

Stephen J. Kalafut

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 and 10-22 is/are allowed.
- 6) ☒ Claim(s) 7-9 and 23-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>19 December 2003</u> . | 6) <input type="checkbox"/> Other: ____. |

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Pohl *et al.* (US 3,907,600).

These claims are in product-by-process format, and are thus examined for the characteristics of the product. See MPEP 2113 and the cases cited therein. Pohl *et al.* disclose a fuel cell electrode comprising selenides or sulfides of Mo, W or Cr, mixed with a conductive material, which would be a support. See column 1, line 65 through column 2, line 3; and Examples II through IV. Since the recited process would result in a compound comprising one of the recited metals with selenium or sulfur, the resulting product would not distinguish from the materials disclosed by Pohl *et al.*

Claim 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by either Chianelli *et al.* (US 4,390,514) or Ishii *et al.* (US 6,166,264).

Chianelli *et al.* disclose the compound RuS₂, which would not distinguish from the set of compounds resulting from the present combining of Ru and sulfur. See column 7, lines 13-16. The compound is used as a catalyst, and may be absorbed on, and thus supported by, a metal oxide (column 7, lines 45-52).

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Ishii *et al.* disclose ruthenium compounds such as ruthenium sulfide (column 2, lines 23-26), supported on a carrier (column 3, lines 56-58), the compound not distinguishing from the set of compounds resulting from the present combining of Ru and sulfur.

Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by Steinberger *et al.* (US 5,219,922).

Steinberger *et al.* disclose the compounds iron sulfide, iron selenide and tungsten sulfide, which would not distinguish from the set of compounds resulting from the present combining of Fe or W with S or Se.

Claims 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Schmid *et al.* (US 6,063,179).

Schmid *et al.* disclose sulfides of Fe, Co, Ni, Cr, No and W (column 2, lines 55-58), which are coated on, and thus supported by, silicon oxide platelets (column 2, lines 18-23). These compounds would not distinguish from the set of compounds resulting from the present combining of Fe, Co, Ni, Cr, No or W with sulfur.

Claims 7, 8, 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by McGowan (US 4,369,063).

McGowan discloses nickel selenide and cobalt selenide (column 2, lines 58-62), mixed with, and thus supported by, a glass frit and particulate silver (column 2, lines 24-36). The two

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selenides would not distinguish from the set of compounds resulting from the present combining of Ni or Co with Se.

Claims 7-9 and 23-25 are rejected under 35 U.S.C. 102(a) or (b) as being anticipated by Bron *et al.* ("Influence of selenium..."), cited by applicant.

Bron *et al.* disclose a ruthenium/selenium catalyst, supported on carbon (page 511, left column, section 2.2), which is intended to be used in a fuel cell cathode (page 510, section 1). While Bron *et al.* do not disclose the present step of heating a precipitate, or reacting a metal precipitate with Se, these claims are drawn to a product, and are thus considered for their product characteristics, which is a cathode catalyst for fuel cells comprising Ru and Se, and thus not distinguishable from Bron *et al.* The publication date other than the year 2001 is unclear. Thus, Bron *et al.* is available under subsection (b) if published before 31 July 2001, or subsection (a) if published on that date or more recently.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bron *et al.*

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Bron *et al.* do not disclose a stack of fuel cells. However, the arrangement of plural fuel cells into a stack, in order to obtain larger electrical outputs than possible with a single cell, is conventional in the fuel cell art. Thus, this claim would be obvious over Bron *et al.*

Claims 1-6 and 10-22 are allowed. The prior art cited either above or by applicant does not disclose the present methods of making a catalyst, where precipitate containing Ru and Se is heated to at least 600 °C, or where a metal precipitate is then reacted with Se or sulfur.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sjk

STEPHEN J. KALAFUT
PRIMARY EXAMINER
GROUP

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